SERVICE MANUAL
SILVER

MODEL SS2005W

[illegible]

SPECIFICATIONS

AM/FM TUNER SECTION

Antenna System

FM	300 ohm Balance (ext.) or Line cord antenna
AM	10^{ϕ} X 140m/m Ferrite bar-antenna

Tuning Range

FM	88 ~ 108 MHz
AM	530 ~ 1620 KHz
Multiplex separation	30 dB (at 1 KHz)

TAPE DECK

Tape	Compact cassette C60, C90
Tape speed	4.75 cm p.s.
Wow and Flutter	0.25 %
Signal to noise Ratio	45 dB
Mic Impedance	200 ohm
Recording Level Control:	Built-in Automatic Level Control or Manual Control (two slide controls)
Beat Canceller:	Built-in

AUTOMATIC TURNTABLE

Type	4-speed Automatic Record Changer
Turntable Speed	16, 33⅓, 45 & 78 r.p.m.
Cartridge	Ceramic
Needle	ST—Diamond stylus 78—Sapphire stylus
Stylus Pressure	7 ~ 9 gr.
Turntable	28 cm
Motor	4 Poles Outer Roter Induction Motor
Channel Separation	13 dB (min.) at 1000 Hz

AUDIO SECTION

Speaker, Impedance	8 ohm
Music Power	20 W
Frequency Response	35 ~ 30,000 Hz
Signal to Noise ratio	60 dB
Bass Control (at 100 Hz)	+10 dB, -12 dB
Trebele · Control (at 10 KHz)	+9 dB, -17 dB

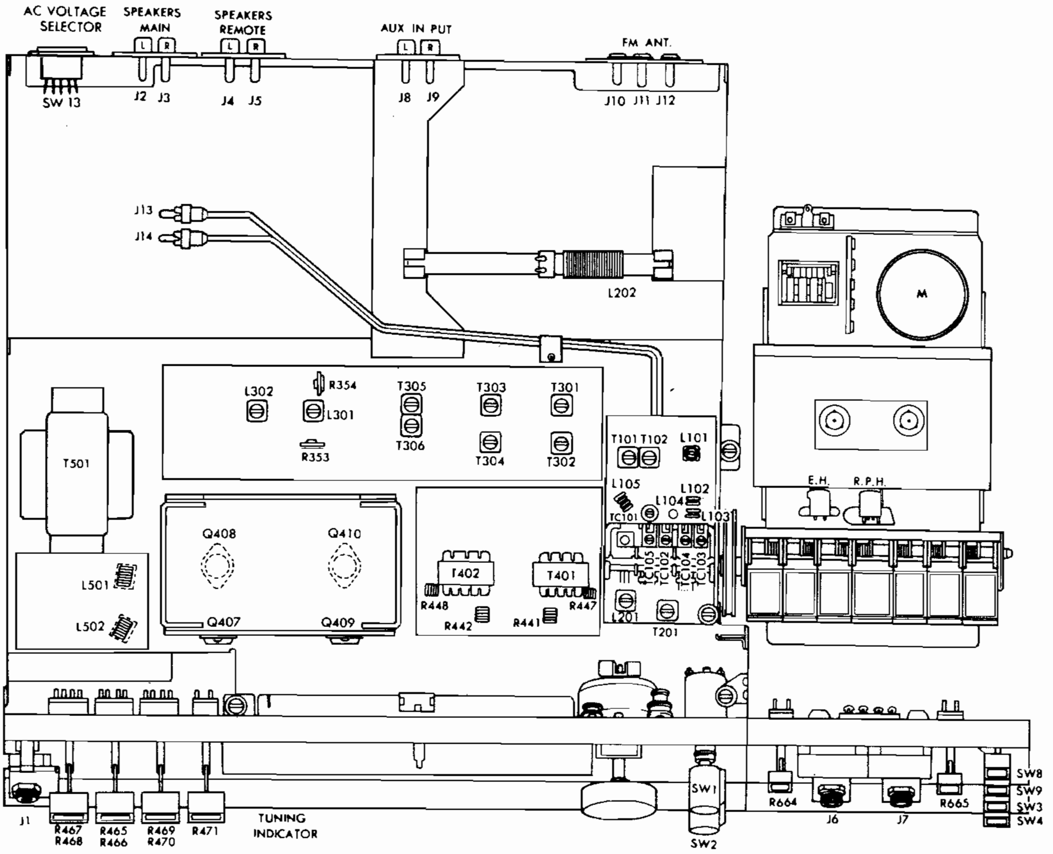
Power Supply	AC110V/AC127V/AC220V/AC240V 50Hz/60Hz
Power Consumption	70 W (Max. Power)
Dimension	57 cm (W) X 43 cm (D) X 23 cm (H)
Weight	16 Kgr.

Note: All the specifications and features are subject to change without notice.

CHASSIS REMOVAL

1. Remove screws at the back cover of cabinet, and open the back. Then, Unlock the clips of automatic record changer inside the cabinet.
2. Lift the automatic record changer gently and disconnect leadwires from it. Remove the changer from cabinet.
3. Remove the chassis mounting screws (9 pcs.) located on the bottom.
4. Lift the cassette tape deck gently and disconnect the leadwires from it. Remove the deck from cabinet.
5. Remove the chassis from cabinet.

FIG. 1 CHASSIS LAYOUT


AC VOLTAGE SELECTOR
SPEAKERS MAIN
SPEAKERS REMOTE
L
R
L
R
AUX IN PUT
L
R
FM ANT.
SW 13
J2
J3
J4
J5
J8
J9
J10
J11
J12
J13
J14
L202
M
L302
R354
L301
R353
T305
T306
T303
T304
T301
T302
T101
T102
L101
L105
L102
L104
L103
TC101
TC105
TC102
TC104
TC103
L201
T201
T501
L501
L502
Q408
Q410
Q407
Q409
T402
T401
R448
R447
R442
R441
E.H.
R.P.H.
J1
R467
R468
R465
R466
R469
R470
R471
TUNING INDICATOR
SW1
SW2
R664
R665
J6
J7
SW8
SW9
SW3
SW4

CAUTION

This stereo receiver with cassette tape recorder and automatic turntable is designed to operate on 110V~240V, 50/60Hz. If change of voltage is necessary, change the voltage by turning AC voltage selector knob on the cabinet back with a screwdriver. This unit can be adjusted for operation on either 110 (110–120), 127 (120–137), 220 (220–230) or 240 (230–250) V. Never attempt to operate it on direct current (DC). If a hum is heard, reverse the power plug in the wall outlet.

TAPE RECORDER ALIGNMENT

TAPE SPEED ADJUSTMENT

1. Connect audio signal generator to horizontal input of oscilloscope, and connect vertical input to speaker output and ground lead to the chassis ground.
2. Insert test cassette with 3 KHz sine-wave into the unit and set the frequency of the audio generator to 3 KHz.
3. Push PLAY button. Generate Lissajours' figure on oscilloscope and adjust variable resistor R709 to stabilize Lissajous figure.

RECORDING BIAS ADJUSTMENT

Adjust bias frequency and bias level, as follows.

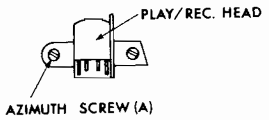
1) Push PLAY and REC. buttons for putting the unit in recording condition.
2) Connect AC VTVM between the junction of R615 & C605 and the ground. Then, adjust T601 for maximum VTVM reading.
3) Then, adjust R660 for 20mV indication on AC VTVM.
4) Also, adjust R661 to have 20mV indication between the junction of R620 & C611 and the ground.

HEAD ALIGNMENT

The forward-backward tilt and the vertical adjustment are fixed with only the azimuth being adjustable. (Azimuth is the side tilt.) Adjust as follows.

1) Connect AC VTVM between test point (TP410) and ground.
2) With the unit OFF, demagnetize heads. Refer to Fig. 2
3) Place Test Cassette on the unit.
4) Put the unit in "PLAY" position. Slide LEVEL control up until reading is obtainable on AC VTVM.
5) Adjust AZIMUTH screw(A) for maximum output of high frequencies.

FIG. 2



MECHANICAL ADJUSTMENT

Adjust SPRING(B) so that the tension of PINCH Roller against capstan would be 250–350 grs. in PLAY position. Refer to Fig. 3.

Select hooking hole for SPRING(44) so that the tension of Pulley Shaft would be 120–160 grs. in PLAY position. Refer to Fig. 4.

FIG. 3

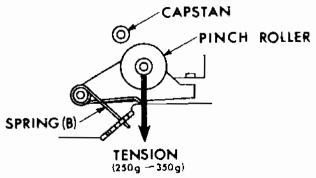
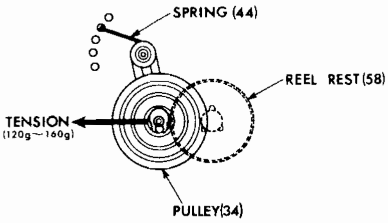


FIG. 4



TROUBLE SHOOTING

VISUAL EXAMINATION

1) Check to insure that take-up and rewind reels turn smoothly without binding or dragging, after the PLAY key has been depressed and the take-up clutch idler, (34) is held away from contact with the take-up reel. (58)
2) Check for oil or other foreign matter on the pinch roller (C), capstan (D), or belt.
3) Check to be certain the capstan, (D) and pinch roller (C) make contact when the PLAY key is depressed.
4) With the tape recorder in the STOP position, check to be sure that the pinch roller turns freely.
5) Depress first the REWIND key and then the FAST FORWARD key and check to be sure that the center drive idler, (61) makes firm contact to the respective rewind and take-up reels (58).
6) With the recorder in the stop position, rotate the flywheel, (38) to make sure that it turns freely.

WILL NOT RECORD

1) Cassette record interlock tabs (29) removed.
2) Microphone defective or mic. jack not making proper contact.
3) Bias oscillator not operating; measure bias as indicated under Recording Bias Adjustment (R660, R661).
4) Defective play/record head (102).
5) Defective cassette.

WILL NOT PLAY BACK

1) Defective play/record head (102).
2) Chassis not amplifing signal.
3) Defective speaker.
4) Defective cassette.

WILL NOT ERASE

1) Erase head (103) shifted.
2) Shorted or open erase head (103).

DISTORTED SOUND

1) Dirt or oxide on head (102).
2) Play/record head (102) out of alignment.
3) Defective amplifier component.
4) Tape drive slipping.
5) Defective microphone.
6) Pinch roller (C) out of round.
7) Binding capstan bearing (E) or bent shaft (D).
8) Defective motor (104).
9) Take-up clutch slipping or sticking (34).
10) Defective cassette; check pressure pad.
11) Flywheel drive belt (39) twisted.

POOR REWIND, FAST FORWARD

1) Defective motor.
2) Oil on main forward/rewind drive idler (61) or drive belt (40).
3) Drive idler or pulley binding or stuck (61).
4) Jammed take-up clutch (34).
5) Power switch SW10, 11 (107) not operating properly.

MOTOR WILL NOT OPERATE PROPERLY

1) Power switch SW10, 11 (107) not closing properly.
2) Broken or slipping drive belt (39).
3) Defective motor or broken wire.

TAPE COUNTER WILL NOT OPERATE PROPERLY

1) Defective counter (74).
2) Broken or counter drive belt (41).

PAUSE WILL NOT OPERATE PROPERLY

1) Pause button not locking.
2) Pinch roller not removed from capstan.

FIG. 5 MECHANISM EXPLODED

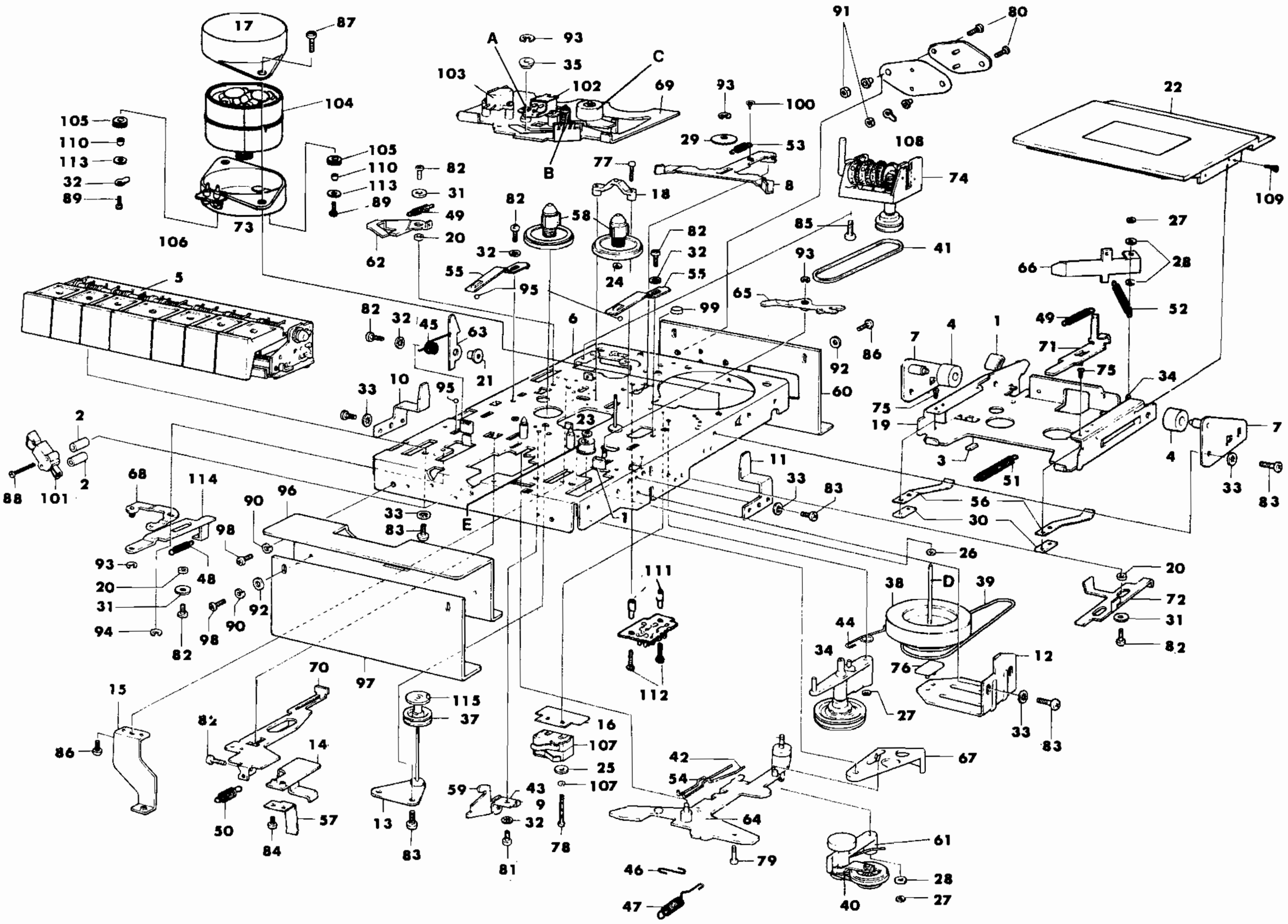
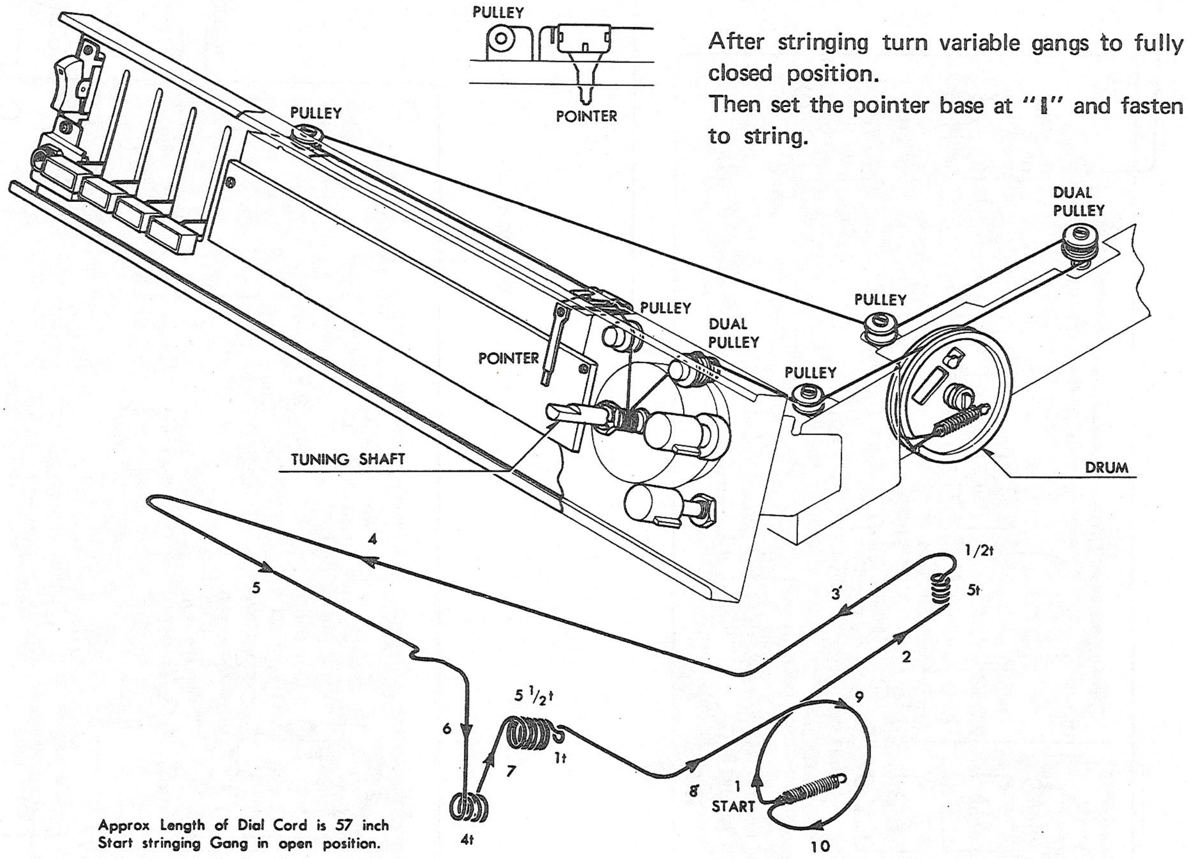

17
87
104
105
110
113
32
89
73
106
105
110
113
89
82
31
49
20
62
A
93
35
C
103
102
69
B
93
100
29
53
77
18
8
91
80
108
74
22
109
82
58
82
32
55
24
32
55
95
99
85
41
93
65
27
66
28
52
5
82
32
45
63
21
10
95
33
6
92
60
86
7
4
1
49
71
75
34
75
19
23
2
88
101
2
68
114
90
96
98
33
83
E
11
33
83
3
51
56
30
4
7
33
83
93
48
20
31
94
82
98
90
92
111
26
38
D
39
20
72
31
82
44
34
76
12
27
33
83
15
70
97
115
37
16
107
25
107
112
86
82
14
50
84
57
13
83
59
43
9
32
81
78
42
54
64
79
46
47
67
61
28
27
40

FIG. 6 DIAL CORD STRINGING


PULLEY
POINTER
PULLEY
DUAL
PULLEY
PULLEY
PULLEY
DUAL
PULLEY
POINTER
PULLEY
TUNING SHAFT
DRUM
1/2t
5t
4
5
3
2
9
6
5 1/2t
1t
7
8
1
START
10
4t

After stringing turn variable gangs to fully closed position.
Then set the pointer base at "I" and fasten to string.

Approx Length of Dial Cord is 57 inch
Start stringing Gang in open position.

FIG. 7 AM/FM TUNER BOARD

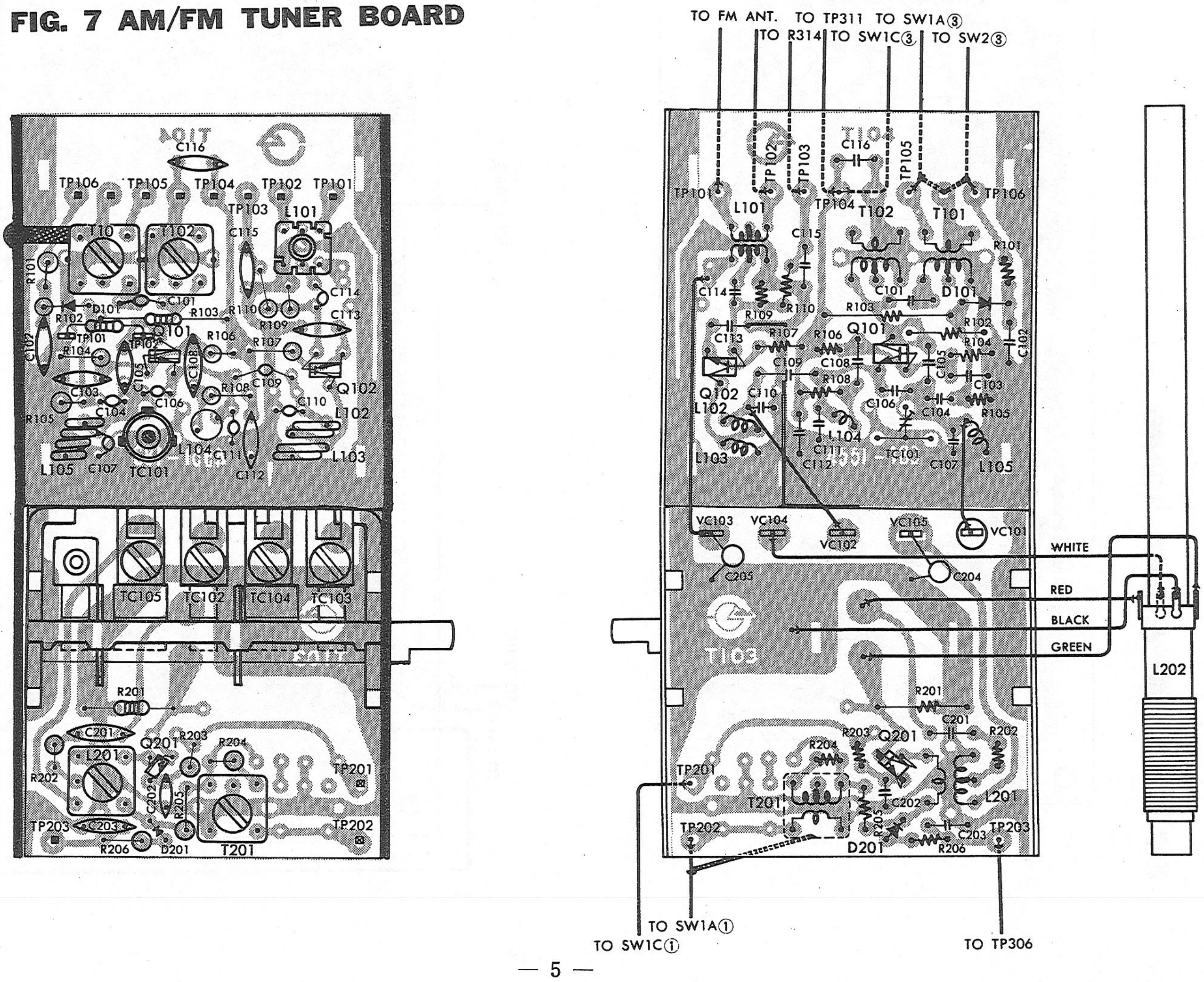

TO FM ANT.
TO TP311
TO SW1A③
TO R314
TO SW1C③
TO SW2③
C116
TP106
TP105
TP104
TP102
TP101
TP103
L101
T101
T102
C115
R101
D101
C101
R103
R110
C114
C113
R102
R109
TP101
R104
R106
R107
Q101
C102
C103
C105
C108
R108
C109
Q102
C110
L102
R105
C104
C106
L104
C111
L103
L105
C107
TC101
C112
TC105
TC102
TC104
TC103
R201
C201
Q201
R203
R204
L201
TP201
R202
C202
R205
TP203
C203
TP202
R206
D201
T201
VC103
VC104
VC102
VC105
VC101
C205
C204
WHITE
RED
BLACK
GREEN
T103
L202
TO SW1A①
TO SW1C①
TO TP306

FIG. 8 IF AMP & MPX BOARD

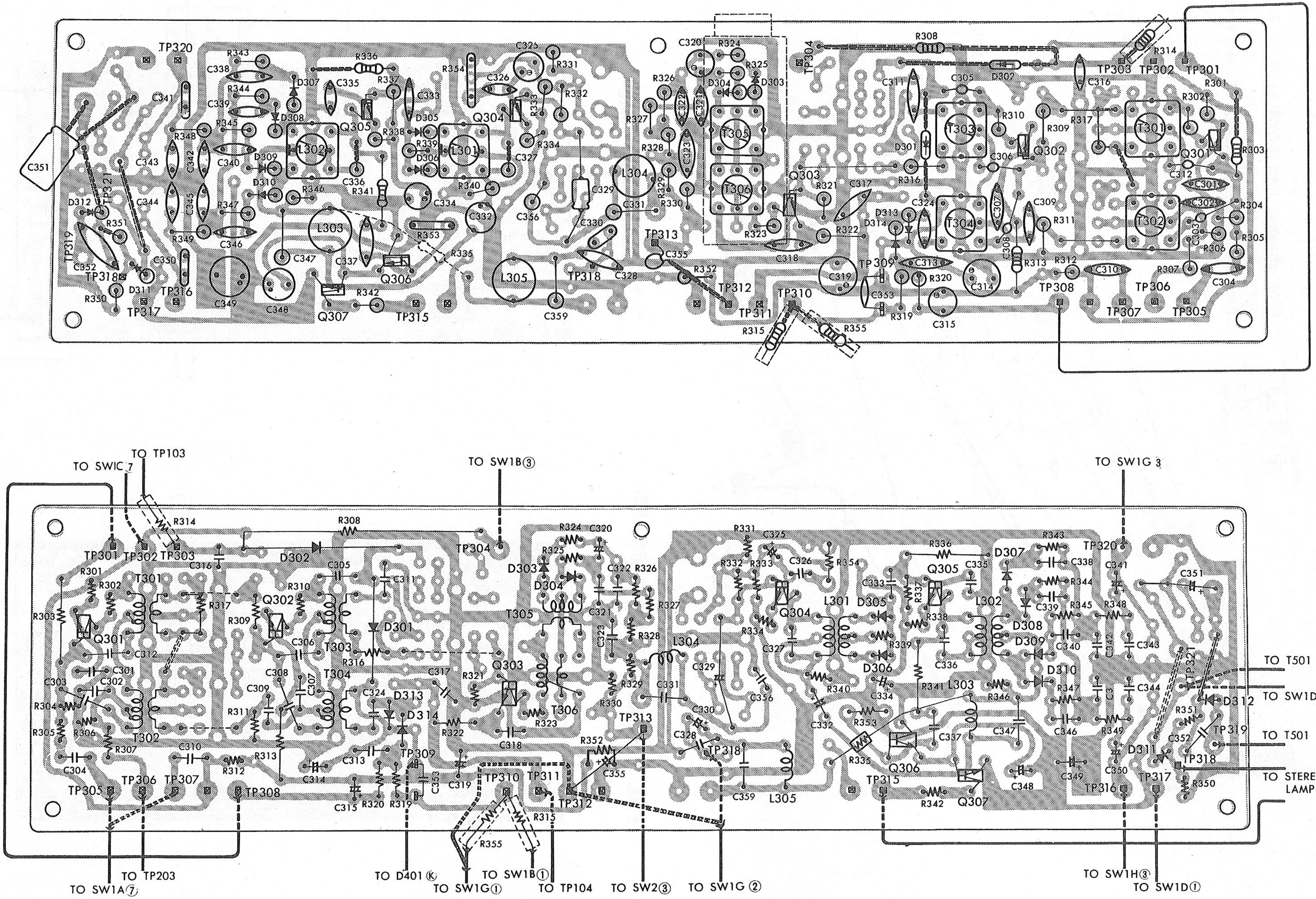

TO SWIC 7
TO TP103
TO SW1B③
TO SW1G 3
TO T501
TO SW1D⑦
TO T501
TO STEREO LAMP
TO SW1A⑦
TO TP203
TO D401Ⓚ
TO SW1G①
TO SW1B①
TO TP104
TO SW2③
TO SW1G ②
TO SW1H③
TO SW1D①
TP301
TP302
TP303
TP304
TP305
TP306
TP307
TP308
TP309
TP310
TP311
TP312
TP313
TP315
TP316
TP317
TP318
TP319
TP320
TP321
T301
T302
T303
T304
T305
T306
L301
L302
L303
L304
L305
Q301
Q302
Q303
Q304
Q305
Q306
Q307
C351

FIG. 9 AUDIO AMP BOARD

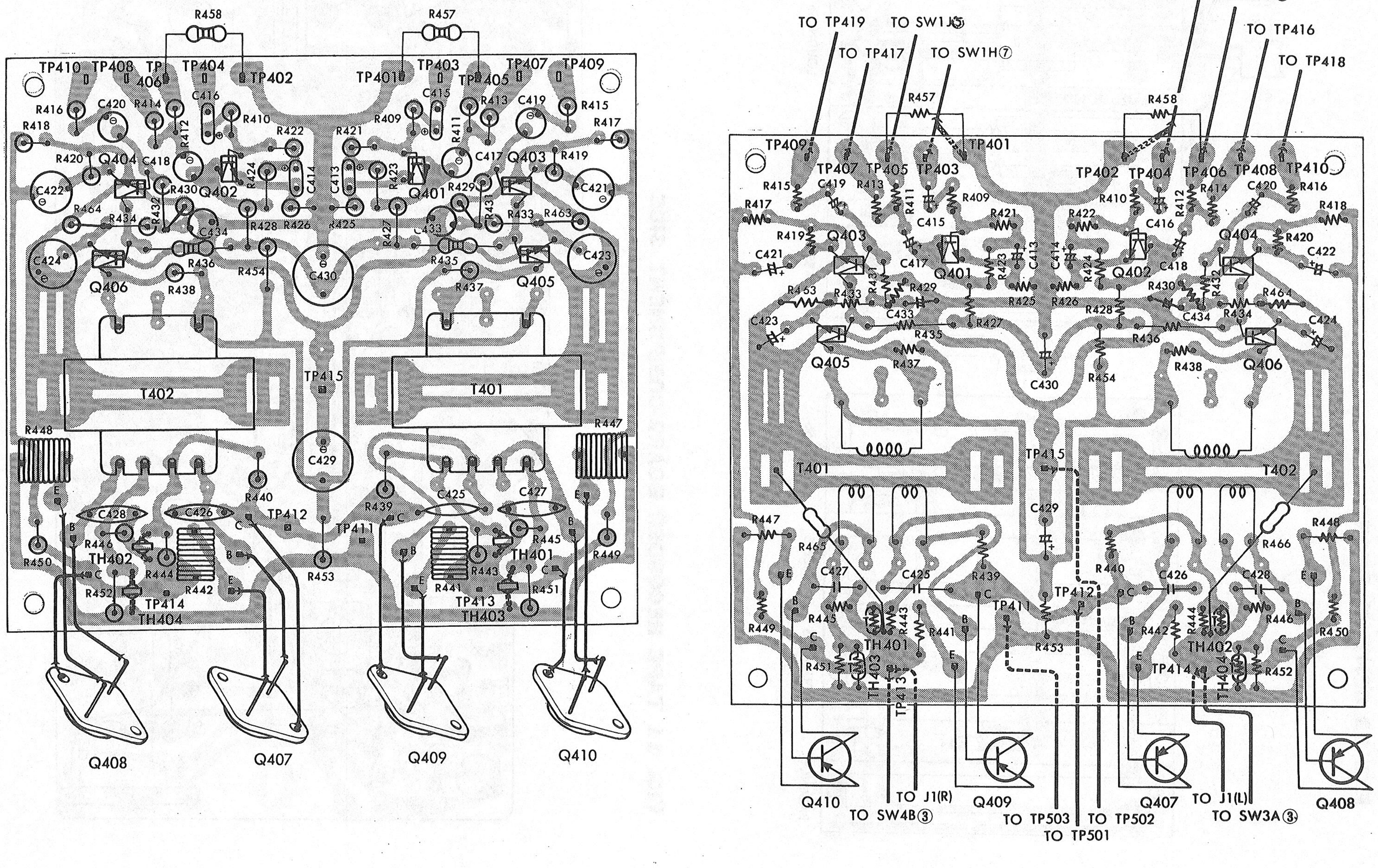
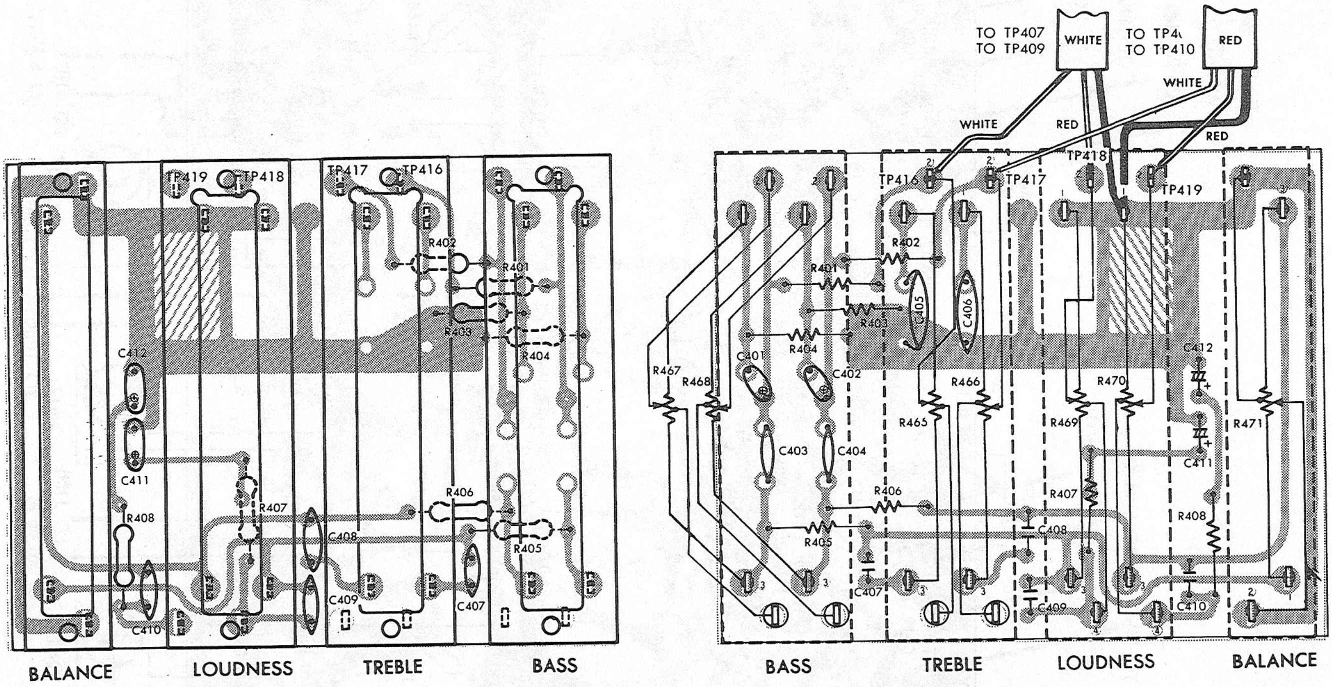
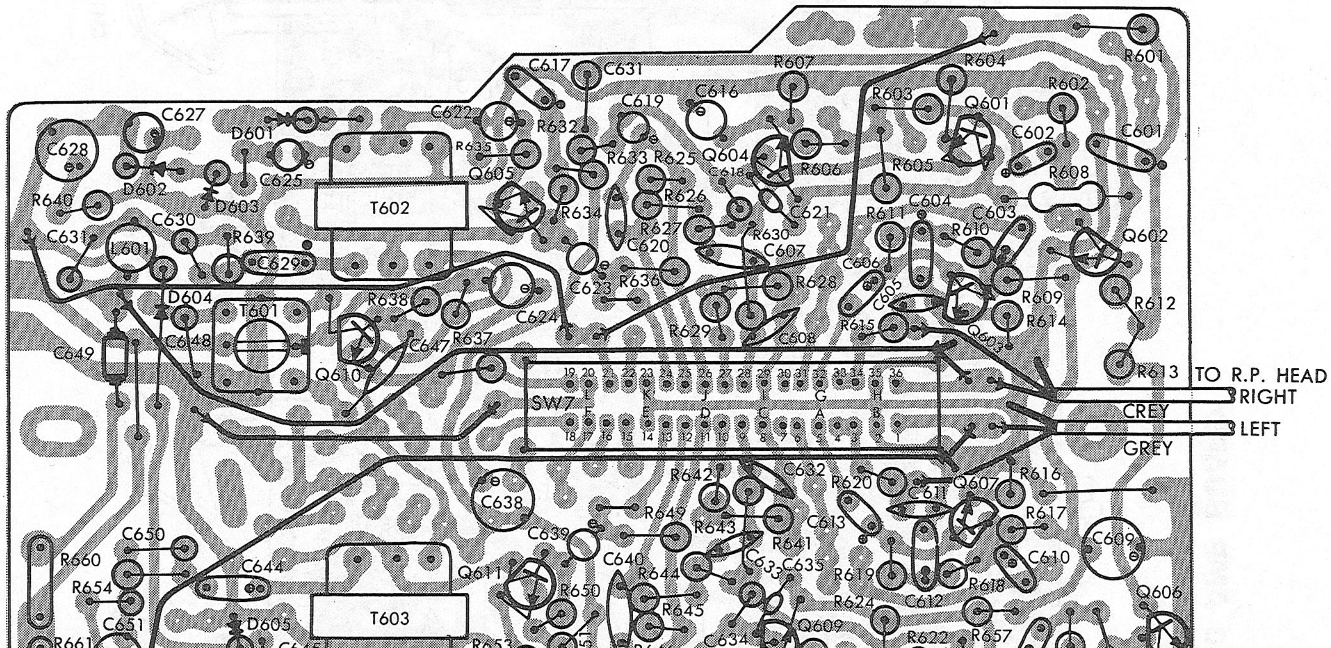

R458
R457
TP410
TP408
TP406
TP404
TP402
TP401
TP403
TP405
TP407
TP409
R416
R418
C420
R414
R412
C416
R410
R422
R421
R409
C415
R411
R413
C419
R415
R417
R420
Q404
C418
R430
Q402
R424
C414
C413
R423
Q401
R429
C417
Q403
R419
C422
C421
R464
R434
R432
C434
R428
R426
R425
R427
C433
R431
R433
R463
C424
C423
Q406
R436
R438
R454
C430
R435
R437
Q405
TP415
T402
T401
R448
R447
C429
R440
R439
C425
C427
C428
C426
TP412
TP411
R445
E
B
C
R446
TH402
R444
R442
R453
R443
TH401
R449
R450
R452
TP414
TH404
R441
TP413
TH403
R451
Q408
Q407
Q409
Q410
TO TP419
TO TP417
TO SW1J⑤
TO SW1H⑦
TO SW1G⑦
TO SW1I⑥
TO TP416
TO TP418
R465
R466
TO SW4B③
TO J1(R)
TO TP503
TO TP501
TO TP502
TO J1(L)
TO SW3A③

FIG. 10 CONTROL BOARD



TO TP407
TO TP409
WHITE
TO TP4
TO TP410
RED
WHITE
RED
WHITE
RED
TP419
TP418
TP417
TP416
R401
R402
R403
R404
R405
R406
R407
R408
C401
C402
C403
C404
C405
C406
C407
C408
C409
C410
C411
C412
R465
R466
R467
R468
R469
R470
R471
BALANCE
LOUDNESS
TREBLE
BASS
BASS
TREBLE
LOUDNESS
BALANCE

FIG. 11 TAPE RECORDER BOARD-COMPONENT SIDE



C617
C631
R607
R604
R601
C619
C616
R603
R602
C627
C622
R632
Q601
C602
C601
C628
D601
R635
R633
R625
Q604
R606
R605
R608
C625
Q605
C618
D602
R640
D603
T602
R634
R626
R627
R630
C621
R611
C604
C603
C630
R639
C620
C607
R610
Q602
C631
L601
C629
C623
R636
C606
R628
R609
R612
D604
T601
R638
C624
R629
C605
R615
R614
C648
C647
R637
C608
Q603
C649
Q610
R613
TO R.P. HEAD
RIGHT
LEFT
CREY
GREY
SW7
19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36
L K J G H
E D C A B
18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1
C632
R642
R620
C611
Q607
R616
C638
R649
R643
C613
R617
C639
R641
C609
C650
C640
C644
C633
C635
R619
C610
R660
R654
Q611
R650
R644
R645
R618
Q606
R624
C612
C651
D605
T603
C634
Q609
R622
R657
R661
L602
C645
R653
R651
R646
R647
C614
R621
C652
D606
C641
C637
R648
R623
Q608
C643
C642
R652

FIG. 12 TAPE RECORDER BOARD-WIRING SIDE

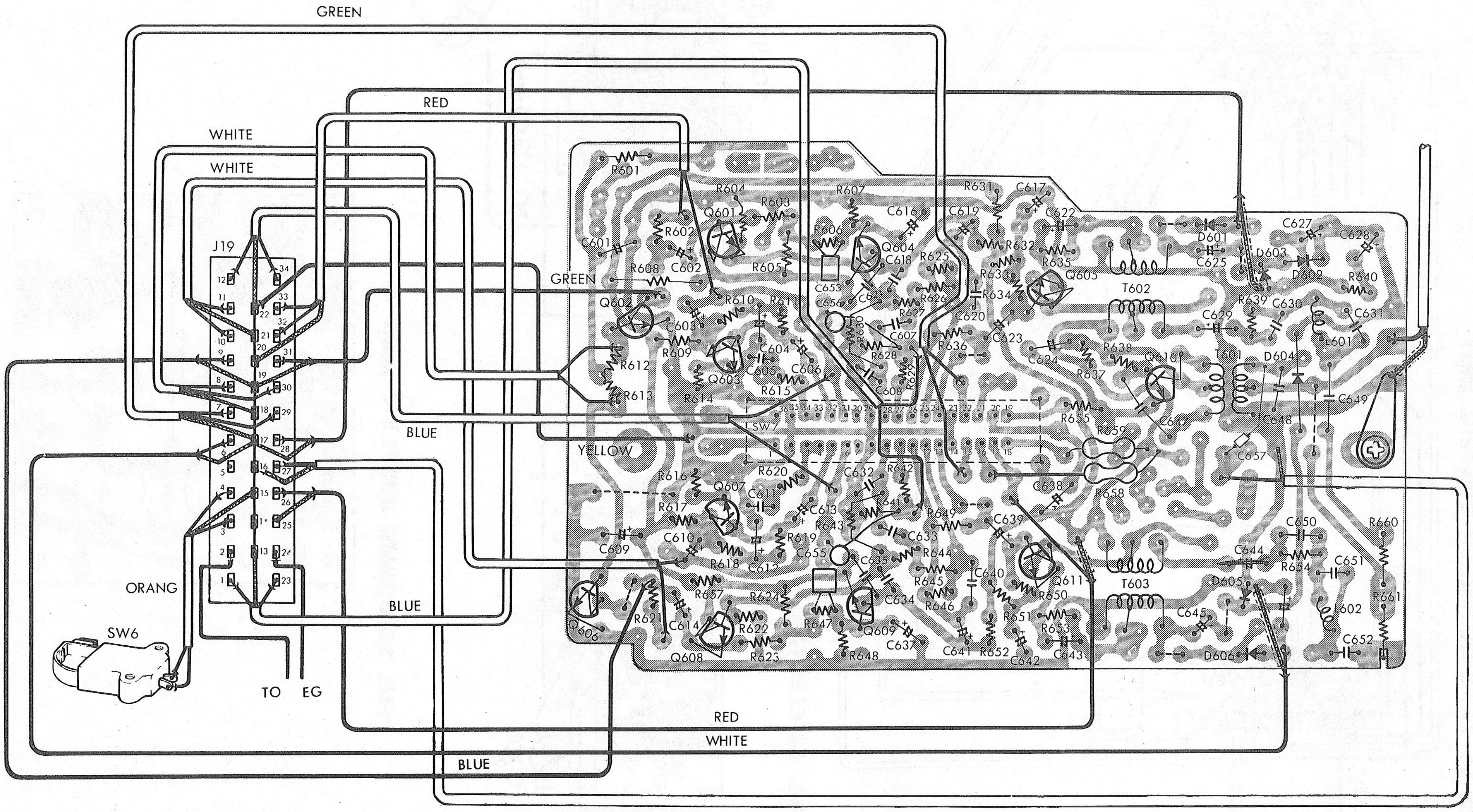

GREEN
RED
WHITE
WHITE
J19
GREEN
BLUE
YELLOW
BLUE
ORANG
SW6
TO EG
RED
WHITE
BLUE
R601
R602
R603
R604
R605
R606
R607
R608
R609
R610
R611
R612
R613
R614
R615
R616
R617
R618
R619
R620
R621
R622
R623
R624
R625
R626
R627
R628
R629
R630
R631
R632
R633
R634
R635
R636
R637
R638
R639
R640
R641
R642
R643
R644
R645
R646
R647
R648
R649
R650
R651
R652
R653
R654
R655
R657
R658
R659
R660
R661
C601
C602
C603
C604
C605
C606
C607
C608
C609
C610
C611
C612
C613
C614
C616
C617
C618
C619
C620
C621
C622
C623
C624
C625
C627
C628
C629
C630
C631
C632
C633
C634
C635
C637
C638
C639
C640
C641
C642
C643
C644
C645
C647
C648
C649
C650
C651
C652
C653
C655
C656
C657
Q601
Q602
Q603
Q604
Q605
Q606
Q607
Q608
Q609
Q610
Q611
D601
D602
D603
D604
D605
D606
T601
T602
T603
L601
L602
SW7

FIG. 13 TAPE RECORDER CONTROL UNIT

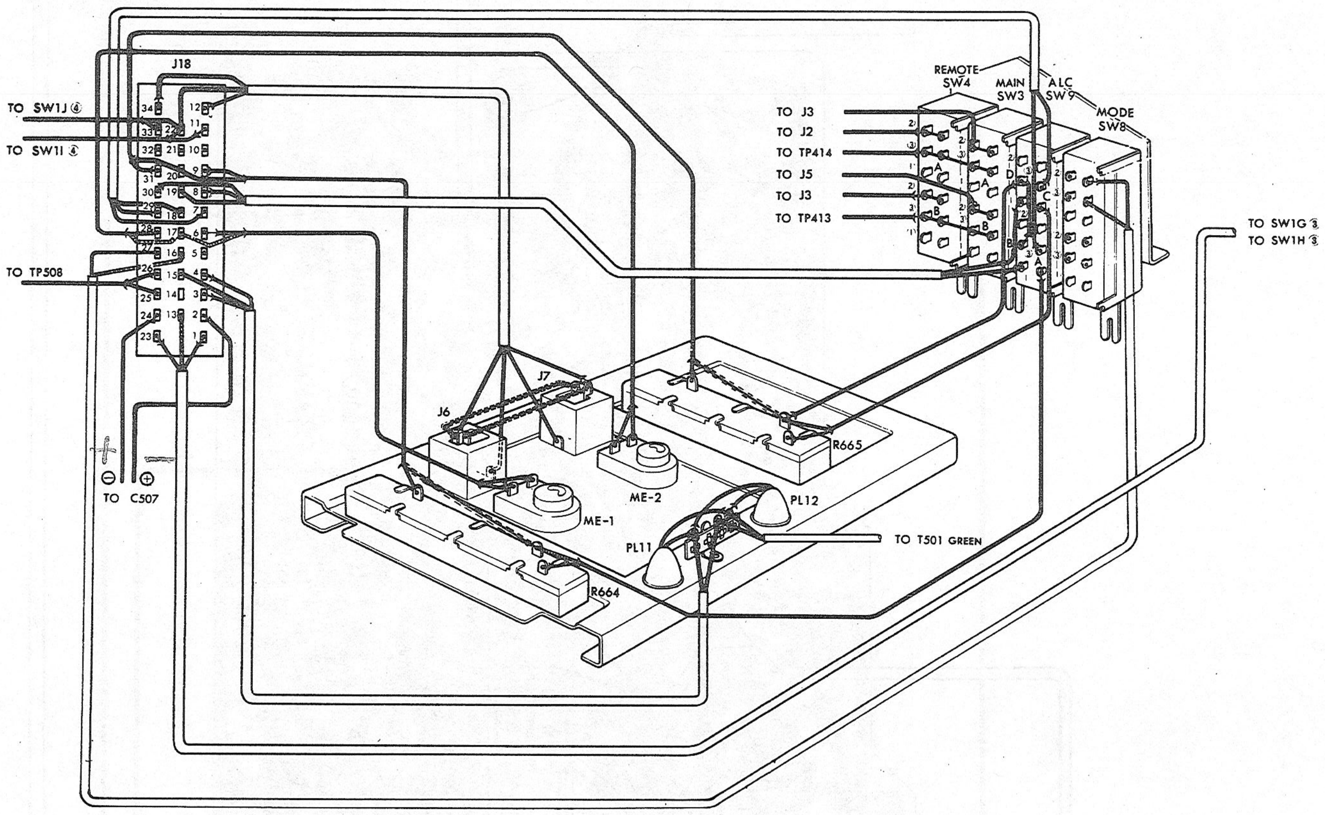

J18
TO SW1J ④
TO SW1I ④
TO TP508
TO C507
⊖
⊕
REMOTE SW4
MAIN SW3
ALC SW9
MODE SW8
TO J3
TO J2
TO TP414
TO J5
TO J3
TO TP413
TO SW1G ③
TO SW1H ③
J6
J7
ME-1
ME-2
PL11
PL12
R664
R665
TO T501 GREEN

FIG. 14 ELECTRIC GOVERNOR

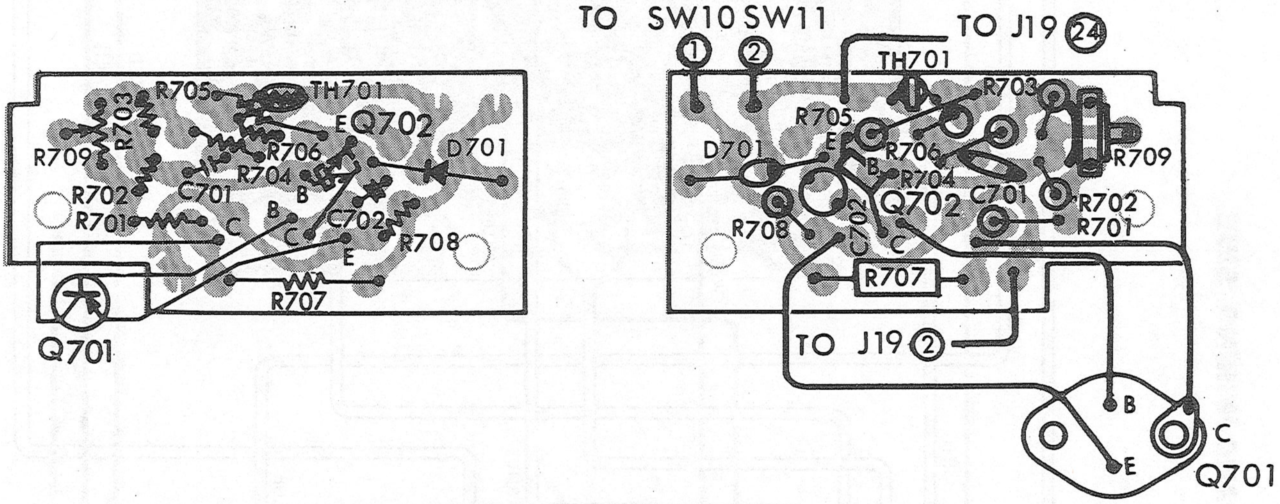

R705
TH701
R703
R709
Q702
R706
D701
R704
R702
C701
R701
C702
R708
R707
Q701
E
B
C
TO SW10 SW11
①
②
TO J19 ㉔
TO J19 ②

FIG. 15 POWER SUPPLY BOARD

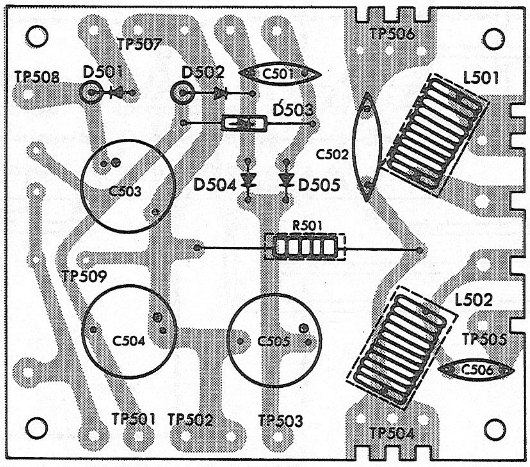

TP506
TP507
TP508
D501
D502
C501
D503
L501
C502
C503
D504
D505
R501
TP509
L502
TP505
C504
C505
C506
TP501
TP502
TP503
TP504

FIG. 16 POWER SUPPLY BOARD-WIRING

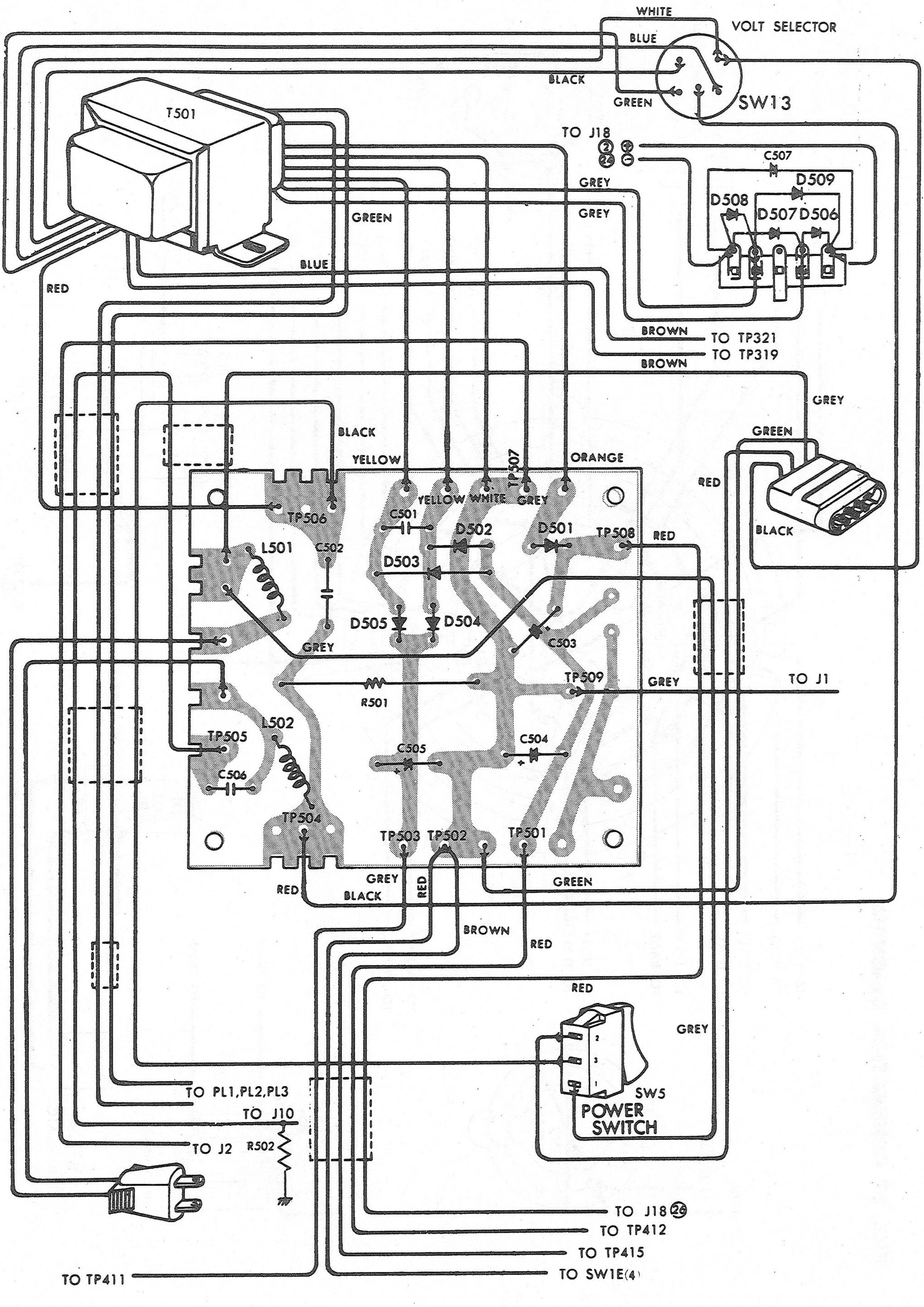

WHITE
VOLT SELECTOR
BLUE
BLACK
GREEN
SW13
T501
TO J18
② ⊕
㉔ ⊖
C507
D509
D508
D507
D506
GREY
GREY
GREEN
BLUE
RED
BROWN
TO TP321
TO TP319
BROWN
GREY
GREEN
BLACK
YELLOW
TP507
ORANGE
RED
YELLOW
WHITE
GREY
TP506
C501
D502
D501
TP508
RED
BLACK
L501
C502
D503
D505
D504
C503
GREY
TP509
GREY
TO J1
R501
L502
TP505
C505
C504
C506
TP504
TP503
TP502
TP501
RED
GREY
BLACK
RED
GREEN
BROWN
RED
RED
GREY
2
3
1
SW5
POWER SWITCH
TO PL1,PL2,PL3
TO J10
R502
TO J2
TO J18 ㉖
TO TP412
TO TP415
TO SW1E(4)
TO TP411

FIG. 17 CONNECTION DIAGRAM

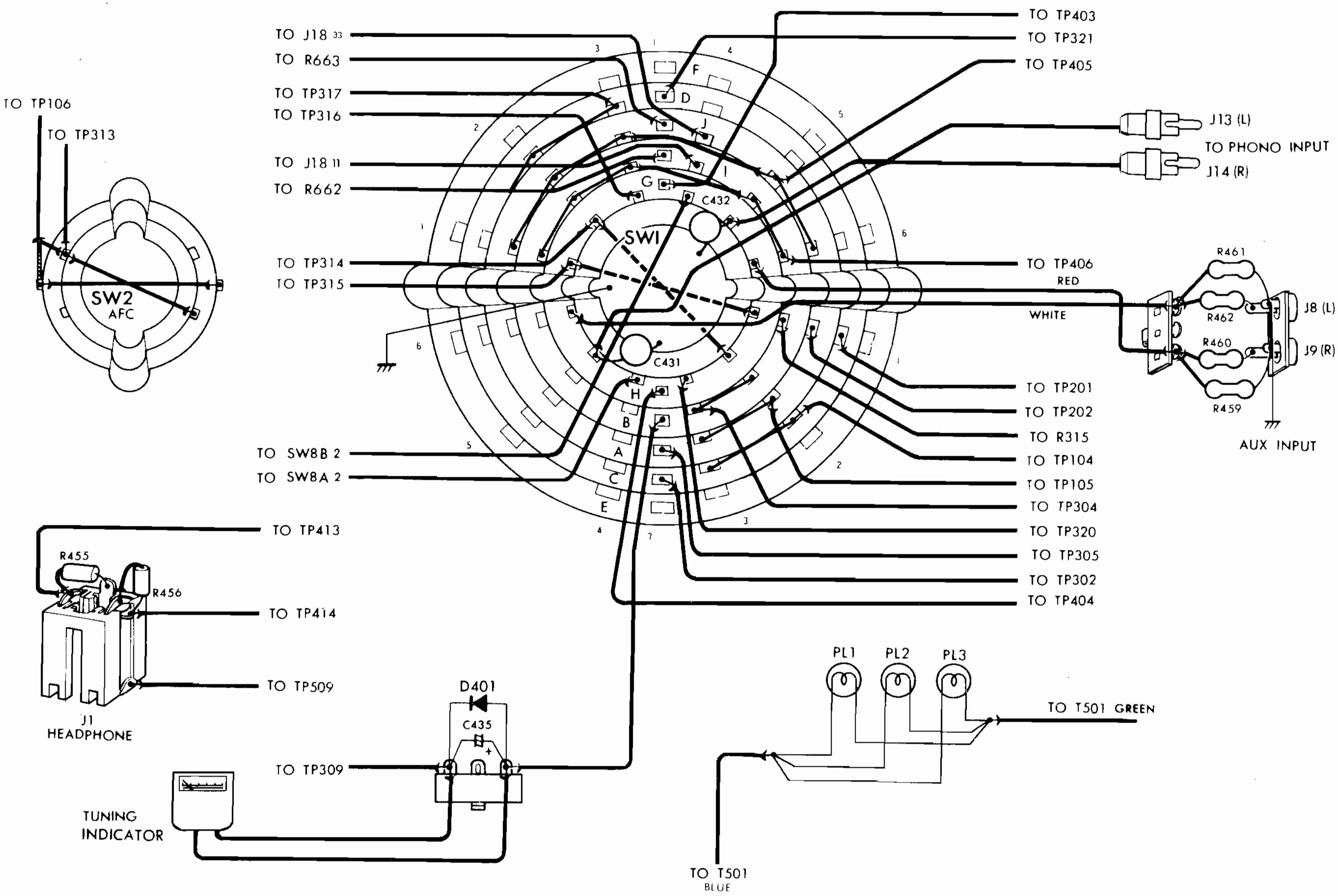
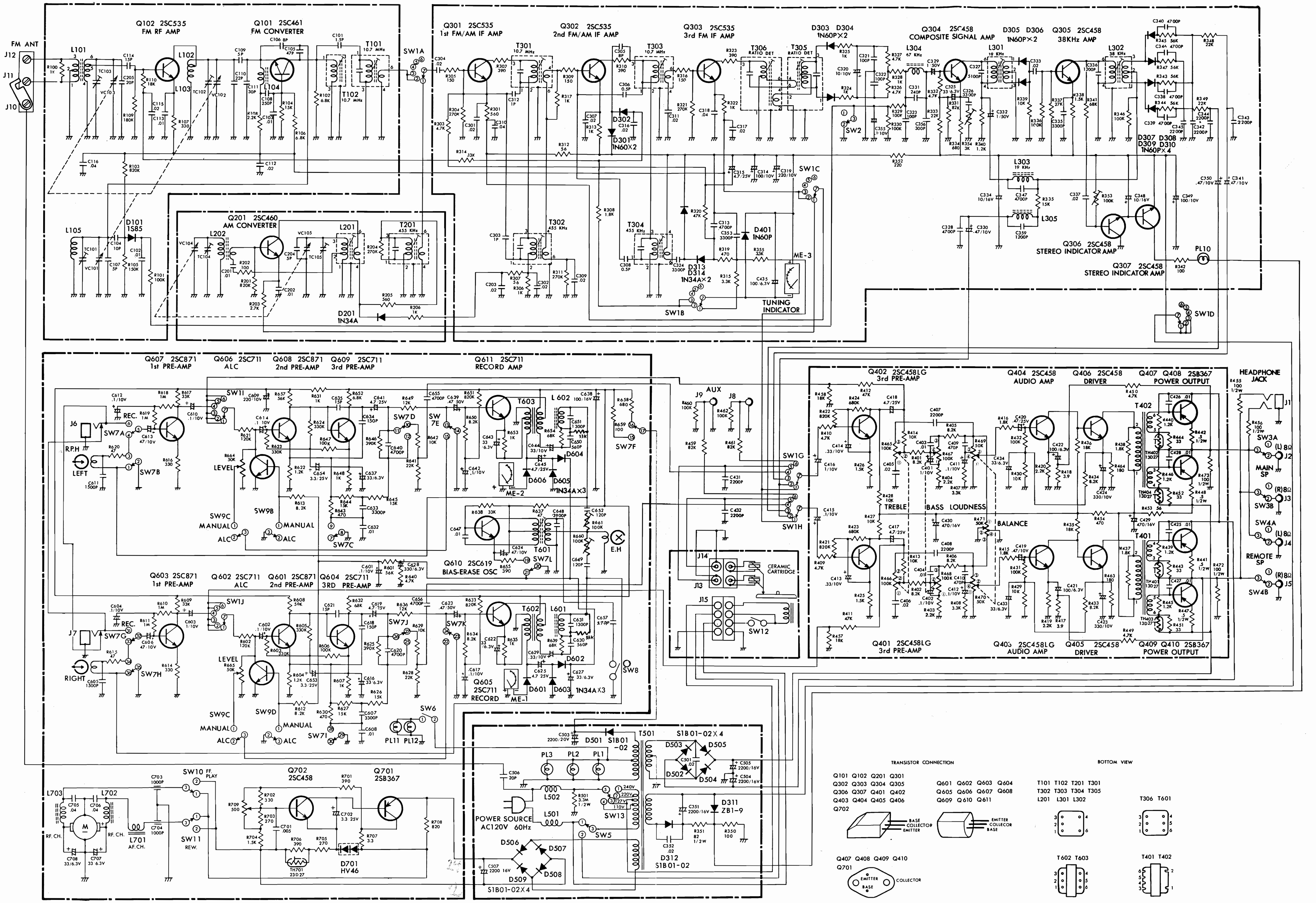

TO TP106
TO TP313
SW2
AFC
TO J18 33
TO R663
TO TP317
TO TP316
TO J18 11
TO R662
TO TP314
TO TP315
TO SW8B 2
TO SW8A 2
SW1
C432
C431
A
B
C
D
E
F
G
H
I
J
TO TP403
TO TP321
TO TP405
J13 (L)
TO PHONO INPUT
J14 (R)
TO TP406
RED
WHITE
R461
R462
R460
R459
J8 (L)
J9 (R)
AUX INPUT
TO TP201
TO TP202
TO R315
TO TP104
TO TP105
TO TP304
TO TP320
TO TP305
TO TP302
TO TP404
TO TP413
R455
R456
TO TP414
TO TP509
J1
HEADPHONE
D401
C435
TO TP309
TUNING
INDICATOR
PL1
PL2
PL3
TO T501 GREEN
TO T501
BLUE

FIG. 18 SCHEMATIC DIAGRAM


FM ANT
J12
J11
J10
Q102 2SC535 FM RF AMP
Q101 2SC461 FM CONVERTER
L101
L102
L103
L104
L105
T101 10.7 MHz
T102 10.7 MHz
SW1A
D101 1S85
Q201 2SC460 AM CONVERTER
L202
L201
T201 455 KHz
D201 1N34A
Q301 2SC535 1st FM/AM IF AMP
Q302 2SC535 2nd FM/AM IF AMP
Q303 2SC535 3rd FM IF AMP
T301 10.7 MHz
T302 455 KHz
T303 10.7 MHz
T304 455 KHz
T306 RATIO DET
T305 RATIO DET
D302
D301 1N60×2
D303 D304 1N60P×2
D401 1N60P
D313 D314 1N34A×2
ME-3
TUNING INDICATOR
SW1B
SW1C
SW2
Q304 2SC458 COMPOSITE SIGNAL AMP
D305 D306 1N60P×2
Q305 2SC458 38KHz AMP
L304 67 KHz
L301 19 KHz
L302 38 KHz
L303 19 KHz
L305
D307 D308 D309 D310 1N60P×4
Q306 2SC458 STEREO INDICATOR AMP
Q307 2SC458 STEREO INDICATOR AMP
PL10
SW1D
Q607 2SC871 1st PRE-AMP
Q606 2SC711 ALC
Q608 2SC871 2nd PRE-AMP
Q609 2SC711 3rd PRE-AMP
Q611 2SC711 RECORD AMP
T603
L602
D606
D605
D604 1N34A×3
ME-2
SW7D
SW7E
SW7F
SW7A
SW7B
SW7C
SW11
SW9B
SW9C
MANUAL
ALC
LEVEL
REC.
J6
R.P.H
LEFT
Q610 2SC619 BIAS-ERASE OSC
T601
SW7L
E.H
Q603 2SC871 1st PRE-AMP
Q602 2SC711 ALC
Q601 2SC871 2nd PRE-AMP
Q604 2SC711 3RD PRE-AMP
T602
L601
SW1J
SW7G
SW7H
SW7J
SW7K
SW7I
SW9D
J7
RIGHT
Q605 2SC711 RECORD
ME-1
D601 D603 D602 1N34A X3
SW8
SW6
PL11 PL12
AUX
J9
J8
SW1G
SW1H
J14
J13
J15
CERAMIC CARTRIDGE
SW12
Q402 2SC458LG 3rd PRE-AMP
Q401 2SC458LG 3rd PRE-AMP
Q404 2SC458 AUDIO AMP
Q403 2SC458LG AUDIO AMP
Q406 2SC458 DRIVER
Q405 2SC458 DRIVER
Q407 Q408 2SB367 POWER OUTPUT
Q409 Q410 2SB367 POWER OUTPUT
TREBLE
BASS
LOUDNESS
BALANCE
T402
T401
HEADPHONE JACK
J1
SW3A
SW3B
SW4A
SW4B
MAIN SP
REMOTE SP
(L) 8Ω
(R) 8Ω
J2
J3
J4
J5
T501
D501 S1B01-02
S1B01-02×4
D503 D505 D502 D504
PL3 PL2 PL1
L502
L501
POWER SOURCE AC120V 60Hz
SW13
240V 220V 127V 110V
SW5
D311 ZB1-9
D312 S1B01-02
D506 D507 D509 D508
S1B01-02×4
SW10 FF. PLAY
SW11 REW.
Q702 2SC458
Q701 2SB367
L703
L702
L701 AF.CH.
RF. CH.
M
TH701
D701 HV46
TRANSISTOR CONNECTION
BOTTOM VIEW
Q101 Q102 Q201 Q301
Q302 Q303 Q304 Q305
Q306 Q307 Q401 Q402
Q403 Q404 Q405 Q406
Q702
Q601 Q602 Q603 Q604
Q605 Q606 Q607 Q608
Q609 Q610 Q611
BASE
COLLECTOR
EMITTER
Q407 Q408 Q409 Q410
Q701
T101 T102 T201 T301
T302 T303 T304 T305
L201 L301 L302
T306 T601
T602 T603
T401 T402

AM AND FM ALIGNMENT

EQUIPMENT REQUIRED

1) Signal generator modulated with 400 or 1,000 Hz covering frequency ranges of 455 KHz, and 500 to 1,700 KHz.
2) Signal generator of 10.7 MHz.
3) FM signal generator covering frequency ranges of 85 to 110 MHz.
4) V.T.V.M. with DC and AC probes.

PRELIMINARIES

1) In all tests both outputs must be terminated with 8 ohm loads. (Use speakers or resistive loads.)
2) Set volume control to maximum.
3) Keep output of signal generator no higher than necessary to obtain an output reading.

AM SECTION

Step	Connect S.G. to	S.G. Output	Dial Setting	Connect V.T.V.M. to	Adjust	Adjust for
SELECTOR AT "AM" POSITION.						
1.	Short wire or coil of Few turns placed to radiate signal into Ferrite-rod antenna	455 KHz	Quiet Point Near 1,600 KHz	AC probe Across output load	T201	Maximum on V.T.V.M.
2.					T302	
3.					T304	
REPEAT (1) THROUGH (3) FOR BEST SENSITIVITY						
4.	SAME AS ABOVE	515 KHz	Gang Closed	AC probe Across output load	L201	Maximum on V.T.V.M.
5.		1,680 KHz	Gang Open		TC105	
6.		600 KHz	Tune to Signal		L202	Slide Coil On Ferrite Rod
7.		1,400 KHz	Tune to Signal		TC104	Maximum on V.T.V.M.
REPEAT (4) THROUGH (7) FOR BEST SENSITIVITY						

FM SECTION

Step	Connect S.G. to	S.G. Output	Dial Setting	Connect V.T.V.M. to	Adjust	Adjust for
SELECTOR AT "FM" POSITION.						
1.	Loop to L104	10.7 MHz Modulated	Quiet point	AC probe of V.T.V.M. Across output load	T102	Maximum on V.T.V.M.
2.					T101	
3.					T301	
4.					T303	
5.					T306	
6.	SAME AS ABOVE	10.7 MHz Unmodulated		DC probe of V.T.V.M. Between ungrounded end of R328	T306 T305	Null on V.T.V.M.
7.	High side to FM Ant. Terminal through Capacitor of 0.01 UF Low side to chassis ground.	87.5 MHz	Gang Closed	AC probe of V.T.V.M. Across output load	L105	Maximum on V.T.V.M.
8.		110 MHz	Gang Open		TC101	
9.		88 MHz	Tune to Signal		L101 102 103	
10.		106 MHz	Tune to Signal		TC102 TC103	
REPEAT (7) THROUGH (10) FOR BEST SENSITIVITY						

MULTIPLEX ALIGNMENT

EQUIPMENT REQUIRED

1) FM-Stereo Simulator.
2) Oscilloscope or V.T.V.M.

PRELIMINARIES

1) Connect FM-Stereo Simulator to FM antenna terminal.
2) Tune radio to 100 MHz FM-Stereo Simulator.
3) AFC "ON".
4) Connect low side of oscilloscope or V.T.V.M. to chassis ground adjacent to point where high side is connected.
5) Set RF deviation to approximately 75 KHz.
6) Keep input signal above limiting level.
7) Set 19 KHz subcarrier level to 10%.

Step	Stereo Simulator Selling		Output Indicator	Adjust	Adjust for
	Modulation Freq.	Function			
1	19 KHz	Stereo left	Stereo Indicator Lamp. (PL14)	L301 L302	Maximum, with Stereo indicator light lit.
2	1 KHz	Stereo left	Oscilloscope or VTVM to TP405	L301 R354	Adjust for minimum.
3	1 KHz	Stereo left	Oscilloscope or VTVM to TP405	L302	Adjust for minimum.
4	1 KHz	Stereo right	Oscilloscope or VTVM to TP406	L302	Adjust to obtain same level as that of left channel.
5	Repeat step 3 and 4, to obtain same level at Left and Right channels.				

PARTS LIST

CAPACITORS

REF NO.	PART NO.	DESCRIPTION
C101	5361-1R5092	1.5pF, 50V, ±0.5pF, Ceramic
C102	5361-103091	0.01uF, 〃 +100 -0%, 〃
103		
113		
C104	5361-100092	10pF, 〃 ±0.5pF, 〃
C105	5361-470092	47pF, 〃 ±10%, 〃
C106	5361-080092	8pF, 〃 ±0.5pF, 〃
305		
C107	5361-050092	5pF, 〃 〃 〃
109		
204		
C108	5361-251092	250pF, 〃 ±10%, 〃
C110	5361-220092	22pF, 〃 〃 〃
C111	5361-300092	30pF, 〃 ±10%, 〃
C112	5361-203091	0.02uF, 〃 +100 -0%, 〃
115		
352		
501		
C114	5361-150092	15pF, 〃 ±10%, 〃
C116	5361-403093	0.04uF,25V,+80% -20%, 〃
310		
318		
C201	5361-103093	0.01uF, 〃 〃 〃
202		
C203	5361-203093	0.02uF, 〃 〃 〃
301		
302		
304		
307		
309		
311		
316		
317		
333		
337		
C205	5361-200092	20pF, 50V, ±10%, 〃
C303	5361-010092	1pF, 50V, ±0.5pF, 〃
312		
C306	5361-0R5092	0.5pF, 〃 ±0.25pF, 〃
308		
C313	5362-472093	4700pF, 50V,±20%, 〃
328		
338		
339		
340		
346		
347		
C314	5345-1070212	100uF, 10V, +100 -10%, Electrolytic
349		
C315	5345-4750214	4.7uF, 25V, 〃 〃
417		
418		
C319	5345-2270212	220uF, 10V, 〃 〃
C320	5345-1060212	10uF, 〃 〃 〃
C321	5361-101092	100pF, 50V, ±10%, Ceramic
322		
323		
C324	5362-332093	3300pF, 〃 ±20%, 〃
326		
335		
353		
C325	5345-3360211	33uF, 6.3V, +100 -10%, Electrolytic
433		
434		
C327	5355-512561	5100pF, 50V, ±5%, Stylor
C329	5345-1050220	1uF, 50V, +150 -10%, Electrolytic

REF NO.	PART NO.	DESCRIPTION
C330	5346-474092	0.47uF, 10V, +40 -20%, Al. solid
341		
350		
419		
420		
C331	5355-241561	240pF, 50V, ±5%, Stylor
C332	5345-1050215	1uF, 50V, +150 -10%, Electrolytic
C334	5345-1060213	10uF, 16V, +100 -10%, 〃
348		
C336	5355-122561	1200pF, 50V, ±5%, Stylor
359		
C342	5362-222093	2200pF, 〃 ±20%, Ceramic
343		
344		
345		
407		
408		
431		
432		
C351	5345-2280113	2200uF, 16V, +100-10%, Electrolytic
504		
505		
507		
C355	5346-104092	0.1uF, 10V, +40-20%, Al. solid
401		
402		
411		
412		
415		
416		
C356	5355-301561	300pF, 50V, ±5%, Stylor
C403	5362-103093	0.01uF, 〃 ±20%, Ceramic
404		
425		
426		
427		
428		
C405	5362-203093	0.02uF, 〃 〃 〃
406		
C409	5362-471093	470pF, 〃 〃 〃
410		
C413	5346-334092	0.33uF, 10V, +40 -20%, Al. solid
414		
C421	5345-1070211	100uF, 6.3V, +100 -10%, Electrolytic
422		
C423	5345-3370211	330uF, 10V, 〃 〃
424		
C429	5345-4770213	470uF, 16V, 〃 〃
430		
C435	5345-1070211	100uF, 6.3V, 〃 〃
C502	5362-502043	0.005uF, AC 150V, +100 -0%, Ceramic MV
C503	5345-2280119	2200uF, 20V, +100-10%, Electrolytic
C506	5362-200044	20pF, AC 150V, ±20%, Ceramic
TC101 –105	5371-47	Trimmers
VC101 –105	5315-014	Variable Capacitor

RESISTORS

(All resistors ¼W ±10% Carbon unless otherwise noted)

REF NO.	PART NO.	DESCRIPTION
R101	5154-104611	100 ohm,
329		
330		
346		
431		
432		

REF NO.	PART NO.	DESCRIPTION
R104	5154-153611	15K ohm,
335		
R105	5154-154611	150K ohm,
R106	5154-682611	6.8K 〃
R107	5154-331611	330K 〃
R108	5154-222611	2.2K 〃
419		
420		
R109	5154-184611	180K 〃
R110	5154-183611	18K 〃
R202	5154-101611	100 〃
342		
350		
R203	5154-272611	2.7K 〃
R204	5154-274611	270K 〃
304		
321		
311		
R205	5154-561611	560 〃
301		
R206	5154-102611	1K 〃
306		
317		
322		
324		
325		
328		
R302	5154-391611	390 〃
310		
323		
R305	5154-151611	150 〃
309		
316		
R307	5154-560611	56 〃
312		
453		
R319	5134-471611	470 〃
R320	5154-473611	47K 〃
411		
412		
R326	5154-472611	4.7K 〃
327		
332		
409		
410		
449		
450		
R331	5154-823611	82K 〃
R333	5154-223611	22K 〃
348		
349		
R334	5154-681611	680 〃
R337	5154-273611	27K 〃
R338	5154-152611	1.5K 〃
425		
426		
R339	5154-103611	10K 〃
413		
414		
427		
428		
429		
430		
R102	5134-682611	6.8K 〃
R103	5134-824611	820K 〃
201		
R303	5134-472611	4.7K 〃
R308	5134-182611	1.8K 〃
R313	5134-102611	1K 〃
100		
R314	5134-333611	33K ohm,
R315	5134-332611	3.3K 〃
355		
407		
408		
R336	5134-104611	100K 〃
460		
462		
R341	5134-683611	68K 〃
R401	5134-822611	8.2K 〃
402		
405		
406		
R403	5134-222611	2.2K 〃
404		
R435	5134-183611	18K 〃
436		
457		
458		
R459	5134-823611	82K 〃
461		
R463	5134-181611	180 〃
464		
R351	5135-820611	82K ohm, 1/2W, ±10%, Carbon
R455	5135-101512	100 〃 〃 〃 〃
456		
472		
473		
R501	5135-335611	3.3M 〃 〃 〃 〃
R353	5101-1040297	100K ohm, Variable Resistor
R354	5101-3020197	3K 〃 〃
R441	5181-0R511(±5%)	0.5 ohm, Wire Resistor
442		
447		
448		
R340	5154-122611	1.2K ohm,
439		
440		
445		
446		
R343	5154-563611	56K 〃
344		
345		
347		
R415	5154-182611	1.8K 〃
416		
437		
438		
R417	5154-3R9611	3.9 〃
418		
R421	5154-824611	820K 〃
422		
R423	5154-684611	680K 〃
424		
R433	5154-822611	8.2K 〃
434		
R443	5154-330611	33 〃
444		
451		
452		
R352	5154-221611	220 〃
R454	5154-471611	470 〃
R465	5223-104031	100K ohm, Bass & Treble Control
466		
467		
468		
R469	5223-503011	50K ohm, Volume Control
470		
R471	5223-503012	50K ohm, Balance
R502	5135-474611	470K ohm, 1/2W ±10%, Carbon

REF NO.	PART NO.	DESCRIPTION
	TRANSFORMERS & COILS	
T101	5563-0233	Transformer FM IFT
T102	5563-0223	〃 〃 〃
T201	5553-0321	Transformer AM IFT
T301	5563-0083	Transformer FM IFT
303		
T302	5553-0141	Transformer AM IFT
T304	5553-0201	〃 〃 〃
T305	5573-0035E	Transformer Discriminator 10
T306	5573-0025D	〃 〃 〃
T401	5581-00129	Transformer Input
402		
T501	5584-00127	Transformer Power
L101	5942-0017	Coil FM ANT.
L102	5991-0195	Coil FM RF
103		
L104	5995-0056	Coil 10.7 MHz IF Trap
L105	5991-0035	Coil AM ANT.
L201	5923-0433	Coil AM
L301	5933-0014	Coil 19KHz Doubler & 38KHz Doubler
302		
L303	5995-00115	Coil 19KHz Trap & 38KHz Trap
305		
L304	5995-00215	Coil 67KHz Trap
L501	5991-0305	Coil Line Choke
L202	5911-98	Coil ANT.
	SEMICONDUCTORS	
Q101	5613-461(B)	Transistor FM Converter
Q102	5613-535(B)	Transistor FM RF Amp.
Q201	5613-460(A)	Transistor AM Converter
Q301	5613-535(C)	Transistor 1st FM/AM IF Amp.
Q302	5613-535(B)	Transistor 2nd & 3rd FM/AM IF Amp.
303		
Q304	5613-458(B)	Transistor Conposite Signal Amp. &
305		38KHz Amp.
Q306	5613-458(C)	Transistor Stereo Indicator Amp.
307		
Q401	5613-458LG	Transistor 3rd Pre-Amp & Audio Amp.
402	(C)	
403		
404		
Q405	5613-458(C)	Transistor Driver
406		
Q407	5612-367(B)	Transistor Power Output
408		
409		
410		
D101	5633-1S85	Diode
D201	5631-1N34A	Diode
313		
314		
D301	5631-1N60	Diode
302		
D303	5631-1N60(P)	Diode
304		
305		
306		
307		
308		
309		
310		
401		
D311	5635-ZB1-9	Zener Diode
D401	5631-1N60(P)	Diode
D501	5632	Rectifier Diode
502	-SIB01-02	
503		
504		
505		

REF NO.	PART NO.	DESCRIPTION
D312	5632-SIB01	Rectifier Diode
506	-02	
507		
508		
509		
TH401	5191-13D27	Thermistor
402		
403		
404		
	MISCELLANEOUS	
	1311-017003	Cabinet Walnut (White-027003)
	1312-017001	Cabinet back cover
	2211-117(ass'y)	Chassis Assembly,Main
	1339-01163	Front Panel
	2631-01113	Dial Pointer
	2611-7130	Drum Dial
	2651-11062	Spring, Dial
	2602-060109	Tuning Shaft
PL1-3	5731-063025	Dial Light
PL10	5731-060293	Stereo Indicator Light
	1305-0119	Knob, Bass, Treble, Loudness, Balance & Level
	1305-0120	Knob, Tuning
	1305-0121	Knob, Fuction & AFC
	1305-0122	Knob, Beat Canceller
	1305-0123	Knob, ALC
	1305-0124	Knob, Speaker Main
	1305-0125	Knob, Speaker Remote
ME3	4323-036	Tuning Indicator
J1	4451-0026	Head Phone Jack
SW1	4411-602011	Switch, Function
SW2	4411-106011	Switch, AFC
SW3	4431-010417	Switch, Speaker Main & Remote
4		
SW5	4404-014	Switch, Power
J2, 3	4482-012	Jack Speaker Main
J4, 5	4482-012	Jack Speaker Remote
J8, 9	4482-012	Jack Aux

CASSETTE RECORDER MECHANICAL

1	1291-6	Rubber band (Chassis 6)
2	2132-7001	Pipe washer (2.2φ)
3	2111-146	Felt (Cassette holder 19)
4	2114-015002	Rubber bushing (Cassette holder 19)
5		Push button ass'y
6	2211-5001	Chassis ass'y
7	2218-5001	Bracket (Cassette holder 19)
8	2219-5014	Brake, for Reel rest ass'y
9	2219-274	Lever
10	2219-5001	Bracket
11	2219-5002	Bracket
12	2219-5004	Bracket, for Flywheel 38
13	2219-5007	Bracket, for Reel rest ass'y shaft
14	2219-5012	Slider (REC. switch)
15	2219-5013	Bracket (PC board)
16	2224-5002	Insuration
17	2251-5001	Shield Case (Motor)
18	2240-42	Holder, for Cassette
19	2254-5001	Cassette holder
20	2401-028	Washer
21	2362-05137	Shaft (Cassette holder lock)
22	1314-0125	Cassette holder lid
23	2402-011	Washer (nylon), for Flywheel shaft
24	2402-014	Washer (nylon)
25	2402-023	Washer (fiber)
26	2402-024	Washer (nylon)
27	2402-026	Washer (nylon)
28	2402-039	Washer (nylon)
29	2410-57	Washer, for brake 8

REF NO.	PART NO.	DESCRIPTION
30	2410-5003	Washer, for Leaf spring
31	2411-2611	Washer
32	2413-261	Lock washer
33	2413-301	Lock washer
34	2672-34	Pulley ass'y
35	2612-1142	Roller, for Slide base ass'y 69
36	4211-11	Lug
37	2617-5001	Pulley, for Counter meter 74 driving
38	2617-12	Flywheel
39	2642-5004	Belt, for Flywheel 38
40	2642-4	Belt, for Idler ass'y 61
41	2642-5001	Belt, for Counter meter 74
42	2651-000016	Spring, for Idler plate ass'y 64
43	2651-000018	Spring, for Lever 59
44	2651-005001	Spring, for Pulley ass'y 34
45	2651-005002	Spring, for Cassette holder lock lever 63
46	2651-5005	Spring, for Idler plate ass'y 64
47	2651-110117	Spring, 〃
48	2651-110325	Spring, for Eject slider 90
49	2651-110310	Spring, for Lever 62 & Lever 71
50	2651-110320	Spring, for Slider 70
51	2651-110321	Spring, for Cassette holder 19
52	2651-110322	Spring, for Cassette eject
53	2651-11101	Spring, for Brake 8
54	2651-5007	Spring, for Idler plate ass'y 64
55	2652-0048	Leaf spring, for Slide base ass'y 69
56	2652-5003	Leaf spring, for Cassette holding
57	2652-5005	Leaf spring, for REC. switch pushing
58	2661-015	Reel Rest ass'y
59	2672-31	Lever
60	2219-397	Base
61	2672-35	Idler ass'y
62	2672-5001	Lever, for erase proof
63	2672-5002	Lever, for Cassette holder lock
64	2672-5005	Idler plate ass'y
65	2672-5006	Lever, for pause
66	2672-5008	Lever, for Cassette eject
67	2672-5009	Lever, for Motor switch 115
68	2672-5012	Lever, for Eject lever 90
69	2674-5001	Slide base ass'y
70	2674-5002	Slider, for recording
71	2674-5004	Slider, for erase proof
72	2674-5005	Slider, for pause
73	2217-5001	Shield Case (Motor)
74	3131-015001	Counter meter
75	2312-260311	Screw (2.6φ X 3m/m)
76	2712-3	Bearing, for Flywheel 38
77	2312-200811	Screw (2.0φ X 8m/m)
78	2312-202011	Screw (2.0φ X 20m/m)
79	2312-260611	Screw (2.6φ X 6m/m)
80	2322-301019	Screw (+) (3.0φ X 10m/m)
81	2320-5001	Screw (+) (2.6φ X 2.7m/m)
82	2322-260511	Screw (2.6φ X 5m/m)
83	2322-300619	Screw (3.0φ X 6m/m)
84	2322-300319	Screw (3.0φ X 3m/m)
85	2322-300519	Screw (3.0φ X 5m/m)
86	2342-300812	Tapping screw (+) (3.0φ X 8m/m)
87	2342-400812	〃 (+) (4.0φ X 8m/m)
88	2312-201611	Screw (2.0φ X 8m/m)
89	2322-260611	Screw (+) (2.6φ X 6m/m)
90	2413-301	Washer (3.2φ)
91	2446-30109	Nut
92	2411-3011	Washer (3.2φ)
93	2461-234	E Ring
94	2461-304	E Ring
95	2711-000211	Steel ball
96	2219-382	L angle
97	2219-390	Base
98	2322-300819	Screw (3.0φ X 8m/m)

REF NO.	PART NO.	DESCRIPTION
99	2114-0773	Holder
100	2424-1603	Eyelet, for Brake 8
101	4463-10	Switch (REC, Lamp)
102	5874-133	Record / Playback head
103	5873-125	Erase head
104	4311-1017	DC Motor
105	2114-18	Bussing
106	2219-5056	Bracket
107	4431-010119	Switch, for Motor
108	4211-4	Lug
109	2312-200641	Screw (2.0φ X 6m/m)
110	2401-025	Washer
111	2132-5010	Spacer
112	2342-302012	Tapping screw (3.0φ X 20m/m)
113	2114-015001	Bussing
114	2674-5006	Slider
115	2675-5001	Coupling

CASSETTE RECORDER ELECTRIC RESISTOR

R601	5154-563611	56K ohm, ±10%, 1/4W, Carbon
608		
657		
R602	5154-124611	120K ohm, 〃 〃 〃
621		
R603	5154-334611	330K ohm, 〃 〃 〃
605		
623		
624		
R604	5154-122611	1.2K ohm, 〃 〃 〃
622		
R606	5154-104611	100K ohm, 〃 〃 〃
647		
R607	5154-102611	1K ohm, 〃 〃 〃
631		
635		
648		
653		
R609	5154-333611	33K ohm, 〃 〃 〃
617		
638		
R610	5154-105611	1M ohm, 〃 〃 〃
611		
618		
619		
R612	5154-822611	8.2K ohm, 〃 〃 〃
613		
634		
650		
R614	5154-331611	330 ohm, 〃 〃 〃
616		
R615	5154-470611	47 ohm, 〃 〃 〃
620		
637		
R625	5154-394611	390K ohm, 〃 〃 〃
646		
R626	5154-153611	15K ohm, 〃 〃 〃
627		
644		
645		
R628	5154-223611	22K ohm, 〃 〃 〃
641		
R629	5154-103611	10K ohm, 〃 〃 〃
642		
662		
663		
R630	5154-471611	470 ohm, 〃 〃 〃
643		
R632	5154-682611	6.8K ohm, 〃 〃 〃
652		

REF NO.	PART NO.	DESCRIPTION
R633	5154-824611	820K ohm, ±10%, 1/4W, Carbon
651		
R636	5154-123611	12K ohm, 〃 〃 〃
649		
R639	5154-683611	68K ohm, 〃 〃 〃
654		
R640	5154-472611	4.7K ohm, 〃 〃 〃
R655	5154-394611	390K ohm, 〃 〃 〃
R658	5134-681611	680 ohm, 〃 〃 〃
R659	5134-101611	100 ohm, 〃 〃 〃
R660	5101-1040297	100K ohm, Variable resistor
611		
661		
664		
665		
R664	5223-503022	50K ohm, Level Control
665		
R701	5154-391611	390 ohm, ±10%, 1/4W, Carbon
706		
R702	5154-331611	330 ohm, 〃 〃 〃
R703	5154-271611	270 ohm, 〃 〃 〃
705		
R704	5154-152611	1.5K ohm, 〃 〃 〃
R707	5135-3R3512	3.3 ohm, ±5%, 1/2W, Solid
R708	5754-821611	820 ohm, ±10%, 1/4W, Carbon
R709	5101-5010199	500 ohm, ±30%, 1/10W, 〃

CAPACITOR

REF NO.	PART NO.	DESCRIPTION
C601	5346-104092	0.1uF, 10V, +40 -20%, Al. solid
602		
603		
604		
610		
612		
614		
617		
642		
C605	5362-152092	1500pF, 50V, ±20%, Ceramic
611		
C606	5346-474092	0.47uF, 10V, +40 -20%, Al. solid
613		
C607	5362-332092	3300pF, 50V, ±20%, Ceramic
633		
C608	5362-103093	0.01uF, 〃 〃 〃
632		
647		
C609	5345-2270212	220uF, 10V, +100-10%, Electrolytic
C616	5345-3360211	33uF, 6.3V, 〃 〃 〃
622		
627		
637		
643		
C618	5355-151561	150pF, 50V, ±5%, Stylor
634		
C619	5345-4750214	4.7uF, 25V, +100 -10%, Electrolytic
625		
641		
645		
C620	5362-472093	4700pF, 50V, ±20%, Ceramic
640		
655		
656		
C621	5361-150092	15pF, 50V, ±10%, Ceramic
635		
C623	5345-4740215	0.47uF, 50V, +150 -10%, Electrolytic
639		
C624	5345-4760212	47uF, 10V, +100 -10%, 〃
C628	5345-3370211	330uF, 6.3V, 〃 〃 〃
C629	5346-334092	0.33uF, 10V, +40 -20%, Al. solid

REF NO.	PART NO.	DESCRIPTION
644		
C630	5355-561561	560pF, 50V, ±5%, Stylor
650		
C631	5355-132561	1300pF, 50V, ±5%, Stylor
651		
C638	5345-1070213	100uF, 16V, +100-10%, Electrolytic
C648	5355-392161	3900pF, 50V, ±5%, Stylor
C649	5355-121561	120pF, 50V, ±5%, Stylor
652		
702		
C653	5345-3350214	3.3uF, 25V, +100 -10%, Electrolytic
654		
C701	5362-502093	0.005uF, 50V, ±20% Ceramic
C703	5362-102099	1000pF, 5000V, +200 -0 % Ceramic
704		
C705	5361-403093	0.04uF, 25V, +80 -20% Ceramic
706		
C707	5345-3360211	33uF, 6.3V, +100-10%, Electrolytic
708		

SEMICONDUCTOR

REF NO.	PART NO.	DESCRIPTION
Q601	5613-871F	Transistor 2nd PRE-AMP
608		
Q602	5613-711F	Transistor ALC
606		
Q603	5613-871F	Transistor 1st PRE AMP
607		
Q604	5613-711F	Transistor 3rd PRE AMP
609		
Q605	5613-711E	Transistor RECORD AMP
611		
Q610	5613-619E	Transistor BIAS-ERASE OSC
Q701	5612-367(B)	Transistor PNP AF
Q702	5613-458(D)	Transistor NPN RF
D601	5631-1N34A	Diode
602		
603		
604		
605		
606		
D701	5641-HV46	Varistor HV46
TH701	5191-23D27	Thermistor 23D27

TRANSFORMER & COIL

REF NO.	PART NO.	DESCRIPTION
T601	5933-7015	Transformer ERASE
T602	5558-0012	Transformer RECORD
603		
L601	5995-0066	Coil 5.6mH Baias Trap
602		
L701	5583-0013	Coil AF CH
L702	5995-00411	Coil RF CH.1 & RF CH.2
703		

MISCELLANEOUS

REF NO.	PART NO.	DESCRIPTION
ME-1	4323-019	Meter, Right & Left level meter
2		
J6, 7	4451-0028	Jack Mic.
J18	4474-19	Jack cassette
J19	4474-20	Jack cassette
PL11	5731-063025	Light (Level meter)
12		
SW6	4463-10	Switch Cassette
SW7	4421-1221	Switch Cassette REC.
SW8	4431-010417	Switch Mode & ALC.
9		
SW10	4431-010119	Switch FF play & REW.
11		

REF NO.	PART NO.	DESCRIPTION
AUTOMATIC TURNTABLE		
	3111-017001	Automatic Turntable (complete)
	CS-1027Dh	Cartridge
	DTS-4	Needle
	PCD-506S(c)a	Pick up (complete)
	1314-017001	Dust Cover
	M6504-B	Pulley (60Hz)
	M6504-A	Pulley (50Hz)
	G2171	Support, record
	G3474-A	Spindle ass'y
	1362-7001	45-Adapter

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